



Alpha Magnetic Spectrometer
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Alpha Magnetic Spectrometer Weekly Reports

August 27, 2004



National Aeronautics and
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Upcoming Events:

- Meeting to discuss CITE Maintenance Costs and the AMS-02 Avionics Functional Interface Test (FIT) - September 9, 2004 – KSC
- Meeting to develop the Integration Plan for AMS-02 at CERN - September 13 - 16, 2004 – Geneva
- Thermal Control System (TCS) Delta Critical Design Review (Δ CDR) - October 18 - 19, 2004 – JSC
- AMS General Technical Interchange Meeting (TIM) - October 20 - 22, 2004 – JSC
- STA Vacuum Case Delivery (on dock at STADCO) - October, 2004
- Electronics TIM and Uninterruptible Power Supply (UPS) CDR - November 1-5, 2004 – Taiwan
- Flight Vacuum Case Delivery (on dock at STADCO) - November, 2004
- AMS General TIM - January 10 - 14, 2005 – KSC
- AMS-02 Avionics Functional Interface Test (FIT) - January 2005 – KSC
- Tracker Thermal Control System (TTCS) PDR - January 2005, CDR - April 2005
- AMS-02 Phase II Safety Review - March 2005 - JSC

Upcoming Tests:

- O-Ring Test Fixture (OTF) Vacuum Test - On going - J13
- Interface Plate Static Test - Date TBD - Location TBD
- Lower Joint Static Test - Date TBD - Location TBD
- STA Acoustic Test - Date TBD - ESTEC - Noordwijk, Netherlands (Schedule under review)
- STA Sine Sweep Test - Date TBD - INFN - Terni, Italy (Schedule under review)
- Full Assembly Modal & Static Tests - Date TBD - IABG - Munich, Germany



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- OTF Vacuum Test - On going - J13

Status:

- Lockheed Martin (LM) Alpha Magnetic Spectrometer (AMS) personnel supported a special kick-off meeting for the UF 4.1 Mission Integration Plan (MIP). Due to the complexity of the AMS-02 Payload and mission, the Engineering Directorate AMS Project Manager requested that the Shuttle Program initiate activity on the MIP well ahead of the Generic Shuttle Schedule Template. At the meeting, the LM AMS Project Manager provided an overview of AMS to initiate discussions on MIP requirements for Avionics, Thermal, Structures, EMI/EMC, Operations, the Interface Control Document (ICD), and Launch Operations. AMS provided a point-of-contact list to the organization responsible for creating the ICD. A meeting will be scheduled in the near future to kick-off the ICD activity.
- As a follow-up to the meetings conducted with STADCO last week, LMSO will be closely monitoring the Vacuum Case fabrication schedule for the next two weeks. Concerns with progress on the contract could lead to another meeting with STADCO and require the involvement of AMS Project Management and LMSO Senior Management. If required, this meeting would tentatively be scheduled in mid-September.
- AMS-02 engineers reviewed a NASA Technical Memorandum which addresses shear loading capability in connections using large numbers of bolts. The algorithm appears to be directly applicable to resolution of the conical flange bolt issue which was identified at the Critical Design Review (CDR). A preliminary assessment was provided to the Structures Working Group (SWG) for review.
- A proof loading test was successfully performed on one AMS-02 Multi-Purpose Lifting Fixture (MPLF). The MPLF is being prepared for shipment to STADCO for Vacuum Case lifting operations.
- Detailed wiring diagrams were created to document connections required for the Functional Integration Test (FIT) to be conducted at KSC in January 2005. Completed drawings were forwarded to the AMS Collaboration and KSC Integration personnel for review and concurrence. The diagrams include cabling and pin-out requirements, and provide the required FIT cabling requirements for AMS-02 Pad operations as well as STS and ISS on-orbit operations.
- The Project Technical Requirements Specification (PTRS) for the AMS Payload Integration Hardware (PIH) is being revised to incorporate comments from a AMS Configuration Control Board (CCB) review of the document. A significant number of comments on the electrical and command and data handling (C&DH) interfaces are being incorporated. Requested changes include updated AMS avionics interface diagrams for both the Shuttle and ISS. The



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AMS/Launch Pad and STS interface diagram was completed this week. The AMS/ISS interface diagram is in work.

- A list of fasteners required for the assembly of the Unique Support Structure - 02 (USS-02) and the Primary Support Stand (PSS) was compiled and forwarded to AMS project personnel. A check of bonded storage records is being conducted to determine current availability prior to preparing and submitting purchase requests for the needed hardware.
- The PSS assembly drawing and eight subassembly drawings were revised and uploaded to the Engineering Drawing Review System (EDRS) for approval and release. Changes to the drawings were primarily fastener related corrections.
- Vacuum Case Activity at STADCO
 - STADCO recently hired a project manager/engineer to support the Vacuum Case program. He is coming up to speed quickly on the program and will help the current project manager with the management of the day-to-day activities at the plant.
 - A review of the official redlines table resulted in the discovery that the Conical Flanges did not have the hole numbers and X-Y direction markings engraved on the parts as was agreed to in March. The program for engraving was initiated, but "fell through the cracks" when the project engineer left STADCO in May. In order to meet schedule, a dot peen process will be used to apply the markings in lieu of engraving. This will allow the Conical Flange fabrication to continue and not require additional programming and setup on the machine.
 - As a result of the meetings at STADCO conducted last week, several action items are being worked including: outstanding STADCO Internal Rejection Reports; milestone payment schedules including partial payments; and action items to prevent any further issues from "falling through the crack" due to the STADCO workload and the personnel shortages.
- Vacuum Case Milestones
 - Weld Fixture Complete - August 2004
 - STA Support Rings Complete - August 2004
 - Weld Development Complete - September 2004
 - STA Conical Flanges Complete - September 2004



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- Shipping Fixture Complete - October 2004
- STA Line Drill Operations Complete - September 2004
- Flight Support Rings Complete - September 2004
- First Article Weld Complete - September 2004
- Flight Conical Flanges Complete - September 2004
- STA Match Drill Procedure Complete - September 2004
- STA Weld Complete (for proof test @ STADCO) - September 2004